

CLAIMS

What is claimed is:

1. A cranial sealing plug assembly adapted for insertion into a burr hole having a size D2 made in a patient's skull, comprising:
 - a burr hole plug ring insertable into the burr hole so as to be flush with the patient's skull, the plug ring having an opening through its center which allows access into the burr hole; and
 - a sealing member that seals the opening through the center of the plug ring;
 - wherein the burr hole plug ring has a diameter D1 that is slightly larger than the size D2 of the burr hole, thereby creating a compression force that prevents movement of a lead passing through the sealing member; and
 - wherein the compression force further stabilizes the burr hole plug assembly in the burr hole.
2. The cranial sealing plug assembly of Claim 1 wherein the sealing member comprises a septum.
3. The cranial sealing plug assembly of Claim 1 wherein the burr hole plug ring includes at least one segment made from a compressible biocompatible material, and at least another segment made from a non-compressible biocompatible material.
4. The cranial sealing plug assembly of Claim 3 wherein there are at least two segments made from the compressible biocompatible material, and at least three segments made from the non-compressible biocompatible material.

5. The cranial sealing plug assembly of Claim 3 wherein the compressible biocompatible material compresses an elastomer selected from the group consisting of: silicone rubber and polyurethane.

6. The cranial sealing plug assembly of Claim 3 wherein the non-compressible biocompatible material is selected from the group consisting of: epoxy, polyurethane, and titanium, and alloy/compounds of epoxy, polyurethane, and titanium.

7. The cranial sealing plug assembly of Claim 1 wherein the sealing member and burr hole plug ring have a radial slit therein for accommodating a lead or cannula passing therethrough.

8. The cranial sealing plug assembly of Claim 1 further including at least one O-ring insert adapter having an outer diameter adapted to snugly fit within the burr hole, and an inner diameter adapted to receive the plug assembly.

9. The cranial sealing plug assembly of Claim 8 further including a plurality of O-ring insert adapters, each having a different outer diameter adapted to snugly fit within respective burr holes of varying sizes, and each having an inner diameter adapted to receive the plug assembly, whereby the plug assembly may be inserted into burr holes of varying sizes.

10. A cranial sealing plug assembly adapted for insertion into a burr hole made in a patient's skull, comprising:
a first member, and
a second member adapted to fit together with the first member to form the plug assembly;

wherein an adjoining interface between the first member and second member is flexible and accommodates the passage of a lead or cannula therethrough; and

wherein the plug assembly is adapted to fit snugly within the burr hole so as to be flush with the patient's skull.

11. The cranial sealing plug assembly of Claim 10 wherein the first member and second member are joined at a pivot point to form a pivoting clamp plug assembly configuration.

12. The cranial sealing plug assembly of Claim 10 wherein the first member and second member slidably engage with each other to form a splittable clamp plug assembly configuration.

13. The cranial sealing plug assembly of Claim 10 further including at least one O-ring insert adapter having an outer diameter adapted to snugly fit within the burr hole, and an inner diameter adapted to receive the cranial sealing plug assembly.

14. The cranial sealing plug assembly of Claim 13 further including a plurality of O-ring insert adapters, each having a different outer diameter adapted to snugly fit within respective burr holes of varying sizes, and each having an inner diameter adapted to receive the plug assembly, whereby the plug assembly may be inserted into burr holes of varying sizes.

15. A cranial sealing plug assembly adapted for insertion into a burr hole made in a patient's skull, comprising:

a burr hole plug ring adapted to fit tightly within the burr hole, the burr hole plug ring having a hole through which a lead may pass into tissue

beneath the skull, and the burr hole plug ring further having a cavity therein into which excess lead length may be wrapped; and

a plug cap adapted to fit on the burr hole plug ring and cover the cavity, the plug cap having an offset hole therein through which the lead may pass, wherein rotating the plug cap causes the excess lead length to coil within the cavity.

16. The cranial sealing plug assembly of Claim 15 further including a snap-on connector that fits over the plug cap.

17. The cranial sealing plug assembly of Claim 16 wherein the snap-on connector is pivotally connected to the burr hole plug ring.

18. A cranial sealing plug assembly adapted for insertion in a burr hole made in a patient's skull, comprising:

a burr hole plug ring made from a biocompatible material adapted to fit tightly within the burr hole so as to be flush with the patient's skull, the burr hole plug ring having a pin hole opening and a lead opening passing therethrough; and

a fixation rod adapted to interferingly fit within the pin hole;
wherein when a wire passes through the lead opening, and the fixation rod is forced into the pin hole, the lead opening is compressed and secures the lead in place.

19. The cranial sealing plug assembly of Claim 18 wherein the lead opening comprises a semi-circular slot opening.

20. The cranial sealing plug assembly of Claim 19 further including a cavity wherein an excess length of the lead may be stored.

21. The cranial sealing plug assembly of Claim 20 further including a snap-cap connector that fits over the cavity.

22. A cranial sealing plug assembly adapted for insertion in a burr hole made in a patient's skull, comprising:

a burr hole plug ring made from a biocompatible material adapted to fit tightly within the burr hole so as to be flush with the patient's skull, the burr hole ring having an opening passing therethrough through which a lead may pass and a radial groove on opposing sides of the plug ring; and

a connector cap adapted to cover the plug ring, the connector cap having a base portion that fits into and closes one side of the radial groove, and wherein the other side of the radial groove remains open and provides an opening through which a lead may pass.

23. The cranial sealing plug assembly of Claim 22 wherein the connector cap further includes a curved edge against which a lead is gently bent as it passes through the sealing plug assembly from the open radial groove to the lead opening.

24. The cranial sealing plug assembly of Claim 22 wherein the connector cap further includes a plurality of connecting pins, and the burr hole plug ring further includes a plurality of insertion holes adapted to receive a respective one of the plurality of connecting pins as the connector cap is positioned to cover the plug ring.

25. The cranial sealing plug assembly of Claim 22 wherein the burr hole plug ring further includes at least one protruding ridge around its outer periphery, said at least one ridge being adapted to secure the plug ring in the burr hole of the patient's skull.

26. The cranial sealing plug assembly of Claim 25 wherein the at least one protruding ridge comprises a thread adapted to facilitate screwing the burr hole plug ring into the burr hole of the patient's skull.

27. The cranial sealing plug assembly of Claim 22 wherein the connector cap further comprises a tool for inserting the plug assembly into the burr hole.